

REMARKS

Claims 1-13 are pending in the application. Applicants respectfully request reconsideration of the rejection of these claims in light of the arguments presented below.

Rejections under 35 U.S.C. § 103

Claims 1-13 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,629,881 to Redeker et al. in view of US Patent No. 6,707,540 to Lehman et al. According to the Examiner, Redeker teaches each feature of claim 1, with the exception of a sensor configured to detect a signal indicating a stress being experienced by the wafer during planarization. Applicants respectfully submit that nowhere does Redeker disclose a computing device in communication with the sensor, the computing device configured to translate the signal to generate a stress map for analysis. The Examiner admits that Redeker does not disclose a sensor, but then tries to assert that Redeker discloses the computing device that translates the signal. Applicants respectfully request that the Examiner specify how Redeker discloses the computing device that translates the signal without disclosing the signal. Furthermore, the computing device of Redeker controls the flow of fluids to the polishing pads and nothing else (see column lines 41-47). Nowhere does the computing system generate a stress map as specified in claim 1. Applicants respectfully request that the Examiner specify where Redeker teaches a computing device that generates a stress map. Moreover, Redeker fails to teach a stress relief device responsive from a signal received from the computing device, where the stress relief device includes a fluid supply. The Examiner asserts that platen 41 discloses the stress relief device specified in claim 1. Nowhere in Redeker is it disclosed that platen 41 is responsive to computing device 110. Applicants respectfully request that the Examiner withdraw the rejection of claim 1 for at least these reasons.

With regard to claim 2, nowhere does Redeker disclose a temperature sensor and the Applicants request that the Examiner point out where a temperature sensor is disclosed if this rejection is maintained. Claims 3-5 depend from claim 1, and are allowable over the cited combination for at least the above stated reasons.

Claim 6 includes the features of a computing device in communication with the plurality of sensors, the computing device configured to generate a thermal map of the substrate from the signal, the computing device capable of analyzing data associated with the thermal map to identify any region of the substrate experiencing thermal stress; and a stress relief device responsive to the computing device, wherein the stress relief device is triggered to relieve the thermal stress when the computing device identifies any region of the substrate experiencing thermal stress, the stress relief device including a fluid supply system capable of delivering a fluid to a top portion of a smoothed layer of slurry deposited over a polishing pad, the portion of the smoothed layer associated with one of the any region of the substrate experiencing thermal stress. Nowhere does Redeker deliver a fluid to a top portion of a smoothed slurry, where the top portion corresponds to a region of the substrate experiencing thermal stress. Redeker cannot measure temperature of the substrate and cannot deliver a fluid to a top portion of a smoothed slurry corresponding to the any area where the temperature is measured. As stated above with regard to claim 1, neither Redeker nor Lehman disclose these features.

With regard to claim 7, the Examiner states that CPU 144 includes a signal compensation module 110. Applicants would like the Examiner to explain how a central processing unit of a computer that controls a fluid supply discloses a signal compensation module configured to account for a signal delay associated with the signal corresponding to the temperature. Nowhere does Redeker mention a temperature sensor and computing device 110 does not disclose a signal compensation module configured as specifies in claim

7, as there is no use for such a module in Redeker. Claims 6-9 are patentable over the cited combination for at least the above stated reasons.

Claim 10 includes the features of a computing device in communication with the sensor, the computing device configured to generate a mechanical stress map of the substrate from the signal, the computing device capable of analyzing data associated with the mechanical stress map to identify a region of the substrate experiencing mechanical stress; and a stress relief device responsive to the computing device, wherein the stress relief device is triggered to relieve the mechanical stress when the computing device identifies any region of the substrate experiencing mechanical stress. As stated above with reference to claims 1 and 6, the combination of Redeker and Lehman fail to disclose these features.

With regard to claim 12, the Examiner states that the motor is capable of reducing a rotational speed of the wafer carrier and a linear velocity of the polishing pad. The section referred to by the Examiner (column 3, lines 50-55) refers to a platen coupled to a motor and nowhere is the wafer carrier mentioned. Furthermore, the platen of Redeker is rotated about its axis and has a rotational velocity and no linear velocity. Applicants respectfully request that the Examiner specify how an orbital type platen that rotates around an axis discloses a polishing pad having a linear velocity, e.g., a belt type pad. Accordingly, claims 10-13 are patentable over the cited reference for at least the above stated reasons.

Claim 4 was rejected under 35 USC 103 as being unpatentable over Redeker et al. in view of Lehman et al. further in view of US Patent No. 5,904,611 to Takahashi et al. The Examiner states that Takahashi provides a fluid curtain to smooth a slurry. The Applicants respectfully refer the Examiner to columns 9 and 10 of Takahashi to understand that the fluid curtain is used in the place of a door so that there is no need to open and close doors. The fluid curtain in Takahashi separates different machines, e.g., between the wafer stocking unit 2 and the wafer polishing unit 3. Instead of a door opening, a continuous fluid stream

separates the compartments. The wafer moves across this stream and becomes wet from this movement and then the wafer is delivered to the wafer polishing unit wet (see column 9, line 36 through column 10 line 40). The fluid curtain in Takahashi has nothing to do with the slurry as the wafer being transported between units has no slurry on it. Claim 4 specifies a fluid curtain control configured to apply a fluid curtain to substantially smooth the slurry disposed over the polishing pad, the fluid curtain being applied upstream from where the fluid is applied to the top surface of the slurry. The fluid curtain of Takahashi is a door and never comes in contact with any slurry. Applicants request that the rejection of claim 4 be withdrawn for at least these reasons.

In view of the foregoing, Applicants respectfully submit that all of the pending claims are in condition for allowance. A notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 774-6921. If any additional fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. LAM2P438). A copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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